

What is claimed is:

## CLAIMS

- 1 1. A computer system comprising:
  - 2 a synchronization server for synchronizing the operation of one or more virtual test
  - 3 systems; and
  - 4 one or more test client computers coupled to the synchronization server, wherein
  - 5 respective ones of the one or more test client computers generate first requests and second
  - 6 requests to the synchronization server.
- 7
- 8 2. The computer system of claim 1, wherein respective ones of the one or more virtual test
- 9 systems are coupled to the respective ones of the one or more test client computers and the one
- 10 or more virtual test systems are coupled to a contact center associated with contact center
- 11 functions; wherein:
  - 12 the one or more virtual test systems include at least one of a virtual telephone
  - 13 caller system associated with virtual telephone caller actions, a virtual agent telephone
  - 14 system associated with virtual agent telephone actions, a virtual agent computer system
  - 15 associated with virtual agent computer actions, and a virtual web user system associated
  - 16 with virtual web user actions; and,
- 17 respective ones of the first requests and respective ones of the second requests
- 18 are associated with respective ones of the virtual telephone caller actions, respective
- 19 ones of the virtual agent telephone actions, respective ones of the virtual agent computer
- 20 actions and respective ones of the virtual web user actions.
- 21
- 22 3. The computer system of claim 2, wherein the respective ones of the first requests and
- 23 the respective ones of the second requests are logically related, to provide logically related
- 24 requests.
- 25
- 26 4. The computer system of claim 3, wherein the respective ones of the first requests and
- 27 the respective ones of the second requests are provided having identifier key values for
- 28 associating respective ones of the logically related requests.

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2 5. The computer system of claim 4, wherein the respective ones of the first requests and  
3 the respective ones of the second requests are provided having number of clients values for  
4 further associating respective ones of the logically related requests.

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6 6. The computer system of claim 4, wherein the synchronization server controls the one or  
7 more test client computers to provide a measurement of one or more time latency values

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9 7. The computer system of claim 5, wherein the time latency values correspond to at least  
10 one of a time latency value between respective ones of the virtual telephone caller actions, a  
11 time latency value between respective ones of the virtual agent telephone actions, a time latency  
12 value between respective ones of the virtual agent computer actions, a time latency value  
13 between respective ones of the virtual web user actions, a time latency value between respective  
14 ones of the virtual telephone caller actions and respective ones of the virtual agent telephone  
15 actions, a time latency value between respective ones of the virtual telephone caller actions and  
16 respective ones of the virtual agent computer actions, a time latency value between respective  
17 ones of the virtual telephone caller actions and respective ones of the virtual web user actions, a  
18 time latency value between respective ones of the virtual agent telephone actions and respective  
19 ones of the virtual agent computer actions, a time latency value between respective ones of the  
20 virtual agent telephone actions and respective ones of the virtual web user actions, a time  
21 latency value between respective ones of the virtual agent computer actions and respective ones  
22 of the virtual web user actions, a time latency value between respective ones of the virtual  
23 telephone caller actions and respective ones of the contact center functions, a time latency value  
24 between respective ones of the virtual agent telephone actions and respective ones of the  
25 contact center functions, a time latency value between respective ones of the virtual agent  
26 computer actions and respective ones of the contact center functions, a time latency value  
27 between respective ones of the virtual web user actions and respective ones of the contact  
28 center functions, a routing accuracy corresponding to connection between a virtual telephone  
29 caller and an agent, and a display accuracy associated with an agent computer screen display.

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1 8. A synchronization method comprising::  
2 generating first requests and second requests from one or more test client computers to a  
3 synchronization server, for synchronizing the operation of one or more virtual test systems.

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5 9. The synchronization method of claim 8, further including:  
6 generating at least one of virtual telephone caller actions with a virtual telephone caller  
7 system coupled to a respective one of the one or more test client computers, virtual agent  
8 telephone actions with a virtual agent telephone system coupled to a respective one of the one  
9 or more test client computers, virtual agent computer actions with a virtual agent computer  
10 system coupled to a respective one of the one or more test client computers, and virtual web  
11 user actions with a virtual web user system coupled to a respective one of the one or more test  
12 client computers; wherein:

13 the virtual telephone caller system, the virtual agent telephone system, the virtual  
14 agent computer system, and the virtual web user system are coupled to a contact center  
15 associated with contact center functions; and

16 respective ones of the first requests and respective ones of the second requests  
17 are associated with respective ones of the virtual telephone caller actions, respective  
18 ones of the virtual agent telephone actions, respective ones of the virtual agent computer  
19 actions and respective ones of the virtual web user actions.

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21 10. The synchronization method of claim 9, further including:  
22 logically relating respective ones of the first requests and respective ones of the second  
23 requests, to provide logically related requests.

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25 11. The synchronization method of claim 10, further including:  
26 associating respective ones of the logically related requests by relating identifier key  
27 values associated with the respective ones of the logically related requests.

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29 12. The synchronization method of claim 11, further including:  
30 relating number of clients values associated the respective ones of the first requests and

1 the respective ones of the second requests, to further associate respective ones of the logically  
2 related requests.

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4 13. The synchronization method of claim 11, further including:  
5 controlling the one or more test client computers to provide a measurement of one or  
6 more time latency values.

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8 14. The synchronization method of claim 13, wherein the time latency values correspond to  
9 at least one of a time latency value between respective ones of the virtual telephone caller  
10 actions, a time latency value between respective ones of the virtual agent telephone actions, a  
11 time latency value between respective ones of the virtual agent computer actions, a time latency  
12 value between respective ones of the virtual web user actions, a time latency value between  
13 respective ones of the virtual telephone caller actions and respective ones of the virtual agent  
14 telephone actions, a time latency value between respective ones of the virtual telephone caller  
15 actions and respective ones of the virtual agent computer actions, a time latency value between  
16 respective ones of the virtual telephone caller actions and respective ones of the virtual web  
17 user actions, a time latency value between respective ones of the virtual agent telephone actions  
18 and respective ones of the virtual agent computer actions, a time latency value between  
19 respective ones of the virtual agent telephone actions and respective ones of the virtual web  
20 user actions, a time latency value between respective ones of the virtual agent computer actions  
21 and respective ones of the virtual web user actions, a time latency value between respective  
22 ones of the virtual telephone caller actions and respective ones of the contact center functions, a  
23 time latency value between respective ones of the virtual agent telephone actions and respective  
24 ones of the contact center functions, a time latency value between respective ones of the virtual  
25 agent computer actions and respective ones of the contact center functions, a time latency value  
26 between respective ones of the virtual web user actions and respective ones of the contact  
27 center functions, a routing accuracy corresponding to connection between a virtual telephone  
28 caller and an agent, and a display accuracy associated with an agent computer screen display.

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30 15. A synchronization method, including:

1 generating first requests and second requests from one or more test client computers to a  
2 synchronization server;

3 associating a portion of a first software program associated with a first respective one of  
4 the one or more test client computers with a respective one of the first requests having a first key  
5 value;

6 associating a portion of a second software program associated with a second respective  
7 one of the one or more test client computers with a respective one of the second requests having  
8 the first key value;

9 transmitting the respective one of the first requests to the synchronization server;

10 transmitting the respective one of the second requests to the synchronization server;

11 identifying a matching request pair as the respective one of the first requests having the  
12 first key value in combination with the respective one of the second requests having the first  
13 key value;

14 transmitting a notification of the matching pair from the synchronization server to the  
15 first respective one of the one or more test client computers and to the second respective one of  
16 the one or more test client computers; and

17 bypassing the portion of the first software program if the notification is received by the  
18 first respective one of the one or more test client computers.

19  
20 16. A synchronization method, including:

21 generating first requests and second requests from one or more test client computers to a  
22 synchronization server;

23 associating a portion of a first software program associated with a first respective one of  
24 the one or more test client computers with a respective one of the first requests having a first  
25 key value and a first number of clients value;

26 associating a portion of a second software program associated with a second respective  
27 one of the one or more test client computers with a respective one of the second requests having  
28 the first key value and the first number of clients value;

29 transmitting the first respective one of the first requests to the synchronization server;

30 transmitting the respective one of the second test client requests to the synchronization

1 server;

2 identifying a matching request pair as the respective one of the first requests having the

3 first key value and the first number of clients value in combination with the respective one of

4 the second requests having the first key value and the first number of clients value;

5 transmitting a notification of the matching pair from the synchronization server to the

6 first respective one of the one or more test client computers and to the second respective one of

7 the one or more test client computers; and

8 pausing execution of the first software program at the portion of the first software

9 program if the notification is received by the first respective one of the one or more test client

10 computers.

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12 17. A computer program product comprising a computer usable medium having computer

13 readable code thereon for synchronizing one or more virtual test systems, including program

14 code comprising:

15 instructions for generating first requests and second requests from one or more test

16 client computers to a synchronization server.

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18 18. The computer program product of claim 17, including:

19 instructions for generating at least one of virtual telephone caller actions with a virtual

20 telephone caller system coupled to a respective one of the one or more test client computers,

21 virtual agent telephone actions with a virtual agent telephone system coupled to a respective

22 one of the one or more test client computers, virtual agent computer actions with a virtual agent

23 computer system coupled to a respective one of the one or more test client computers, and

24 virtual web user actions with a virtual web user system coupled to a respective one of the one or

25 more test client computers; wherein:

26 the virtual telephone caller system, the virtual agent telephone system, the virtual

27 agent computer system, and the virtual web user system are coupled to a contact center

28 associated with contact center functions; and

29 respective ones of the first requests and respective ones of the second requests

30 are associated with respective ones of the virtual telephone caller actions, respective

1       ones of the virtual agent telephone actions, respective ones of the virtual agent computer  
2       actions and respective ones of the virtual web user actions.

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4       19.   The computer program product of claim 18, further including:  
5           instructions for logically relating respective ones of the first requests and respective  
6       ones of the second requests, to provide logically related requests.

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8       20.   The computer program product of claim 19, further including:  
9           instructions for associating respective ones of the logically related requests by relating  
10      identifier key values associated with the respective ones of the logically related requests.

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12      21.   The computer program product of claim 20, further including:  
13           instructions for relating number of clients values associated the respective ones of the  
14       first requests and the respective ones of the second requests, to further associate respective ones  
15       of the logically related requests.

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17      22.   The computer program product of claim 20, further including:  
18           instructions for controlling the one or more test client computers to provide a  
19       measurement of one or more time latency values.

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21      23.   The computer program product of claim 22, wherein the time latency values correspond  
22       to at least one of a time latency value between respective ones of the virtual telephone caller  
23       actions, a time latency value between respective ones of the virtual agent telephone actions, a  
24       time latency value between respective ones of the virtual agent computer actions, a time latency  
25       value between respective ones of the virtual web user actions, a time latency value between  
26       respective ones of the virtual telephone caller actions and respective ones of the virtual agent  
27       telephone actions, a time latency value between respective ones of the virtual telephone caller  
28       actions and respective ones of the virtual agent computer actions, a time latency value between  
29       respective ones of the virtual telephone caller actions and respective ones of the virtual web  
30       user actions, a time latency value between respective ones of the virtual agent telephone actions

1 and respective ones of the virtual agent computer actions, a time latency value between  
2 respective ones of the virtual agent telephone actions and respective ones of the virtual web  
3 user actions, a time latency value between respective ones of the virtual agent computer actions  
4 and respective ones of the virtual web user actions, a time latency value between respective  
5 ones of the virtual telephone caller actions and respective ones of the contact center functions, a  
6 time latency value between respective ones of the virtual agent telephone actions and respective  
7 ones of the contact center functions, a time latency value between respective ones of the virtual  
8 agent computer actions and respective ones of the contact center functions, a time latency value  
9 between respective ones of the virtual web user actions and respective ones of the contact  
10 center functions, a routing accuracy corresponding to connection between a virtual telephone  
11 caller and an agent, and, and a display accuracy associated with an agent computer screen  
12 display.

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14 24. A computer program product comprising a computer usable medium having computer  
15 readable code thereon for synchronizing one or more test client computers, including program  
16 code comprising:

17       instructions for generating first requests and second requests from one or more test  
18 client computers to a synchronization server;

19       instructions for associating a portion of a first software program associated with a first  
20 respective one of the one or more test client computers with a respective one of the first requests  
21 having a first key value;

22       instructions for associating a portion of a second software program associated with a  
23 second respective one of the one or more test client computer with a respective one of the  
24 second requests having the first key value;

25       instructions for transmitting the respective one of the first requests to the  
26 synchronization server;

27       instructions for transmitting the respective one of the second requests to the  
28 synchronization server;

29       instructions for identifying a matching request pair as the respective one of the first  
30 requests having the first key value in combination with the respective one of the second

1 requests having the first key value;

2       instructions for transmitting a notification of the matching pair from the synchronization

3 server to the first respective one of the one or more test client computers and to the second

4 respective one of the one or more test client computers; and

5       instructions for bypassing the portion of the first software program if the notification is

6 received by the first respective one of the one or more test client computers.

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8 25. A computer program product comprising a computer usable medium having computer

9 readable code thereon for synchronizing one or more test client computers, including program

10 code comprising:

11       instructions for generating first requests and second requests from one or more test

12 client computers to a synchronization server;

13       instructions for associating a portion of a first software program associated with a first

14 respective one of the one or more test client computers with a respective one of the first

15 requests having a first key value and a first number of clients value;

16       instructions for associating a portion of a second software program associated with a

17 second respective one of the one or more test client computer with a respective one of the

18 second requests having the first key value and the first number of clients value;

19       instructions for transmitting the first respective one of the first requests to the

20 synchronization server;

21       instructions for transmitting the respective one of the second test client requests to the

22 synchronization server;

23       instructions for identifying a matching request pair as the respective one of the first

24 requests having the first key value and the first number of clients value in combination with the

25 respective one of the second requests having the first key value and the first number of clients

26 value;

27       instructions for transmitting a notification of the matching pair from the synchronization

28 server to the first respective one of the one or more test client computers and to the second

29 respective one of the one or more test client computers; and

30       instructions for pausing execution of the first software program at the portion of the first

1 software program if the notification is received by the first respective one of the one or more  
2 test client computers.